

## **October 2011 Progress Report on the Agriculture/Stormwater Sub-Group**

### **Sub-Group Members**

Heather Kibbey (City of Everett), Monte Marti (Snohomish Conservation District), Rick Haley (Skagit County), Clare Flannigan (NRCS), Karen Bishop (Whidbey Island Conservation District), Bob Cusimano (ECY), Jim Cowles (WA Dept. of Agriculture), Dino Marshalonis (EPA), Tim Determan (Dept. Health), George Boggs (Whatcom Conservation District), Carolyn Kelly (Skagit Conservation District), Mike Shelby (Western Washington Agriculture), Jay Gordon (Washington Dairy Federation), John Bolender (Mason Conservation District), Karma Anderson (EPA), Sherre Copeland (NRCS), Seth Book (Mason Conservation District), Bill Bowe (Snohomish Conservation District), Ron Cummings (ECY), Scott Collyard (ECY), Rich Doenges (Thurston County), Jaclyn Ford (WA Dept. Ag), Joe Holtrop (Clallam Conservation District), Adam Lorio (Samish Indian Nation), Nora Mena (WA Dept. Ag), Michael See (Skagit County), Heather Trim (People for Puget Sound), and Carol Smith (WA Conservation Commission).

### **Meetings To-Date**

April 11, 2011, May 18, 2011, July 13, 2011, and October 12, 2011. Next meeting is scheduled for January 25 12:30-3:30 at the City of Everett Public Works Building.

### **Goal**

Develop a stormwater monitoring and assessment strategy for potential agricultural impacts on water bodies in Puget Sound.

### **Summary of Discussed Topics**

*Agriculture in Puget Sound.* The Washington Dept. of Agriculture developed a set of maps that provides the quantity and location of agricultural land and dairies in Puget Sound and for each county in Puget Sound (Appendix 1). We discussed the types of agriculture across Puget Sound along with potential stormwater inputs, and concluded that with few exceptions nearly all have the same parameters and timing issues. The quantity and location information is useful to prioritize areas and issues.

*Pesticide Monitoring.* We reviewed the joint Dept of Agriculture/Ecology pesticide monitoring program, and found it to be comprehensive, well-designed, and addressing the agriculture pesticide monitoring needs in general. This program monitors surface waters utilized by salmon and located in high potential pesticide use areas. There are five sample sites in the agricultural areas of Skagit and two in the urban areas of King County. These are intensively sampled on a weekly basis from late March through mid-September. USGS collection methods are used, and the tests look for 160 different pesticides.

They rarely find exceedances, and when they do, they have a tiered approach to address the problem starting with education and outreach, followed by best management practices (BMP) requirements, ending with regulatory action.

The agriculture/stormwater group agreed that it is important to maintain this program as the foundation for stormwater pesticide monitoring in Puget Sound. The ag group has three additional areas of interest: 1) conduct additional monitoring during storm events; 2) conduct additional monitoring in another WRIA that has significant agricultural land; and 3) measure copper.

*Fecal and Nutrient Monitoring.* We reviewed the Dept. of Health's Puget Sound monitoring program for fecal coliform. Over 1,000 sites are monitored in Puget Sound for classification uses. This does not include urban and industrial areas where shellfish harvest is not allowed. Systematic random sampling is employed, and federal standards and methodology are followed. Peak flow monitoring is done in selected areas such as the Samish, Nisqually, and Skokomish deltas and Henderson and Eld Inlets. When levels of concern are noted, the DOH interacts with the local entities to try to resolve problems before they worsen. On a twelve year rotational basis, DOH conducts drain-to-drain surveys.

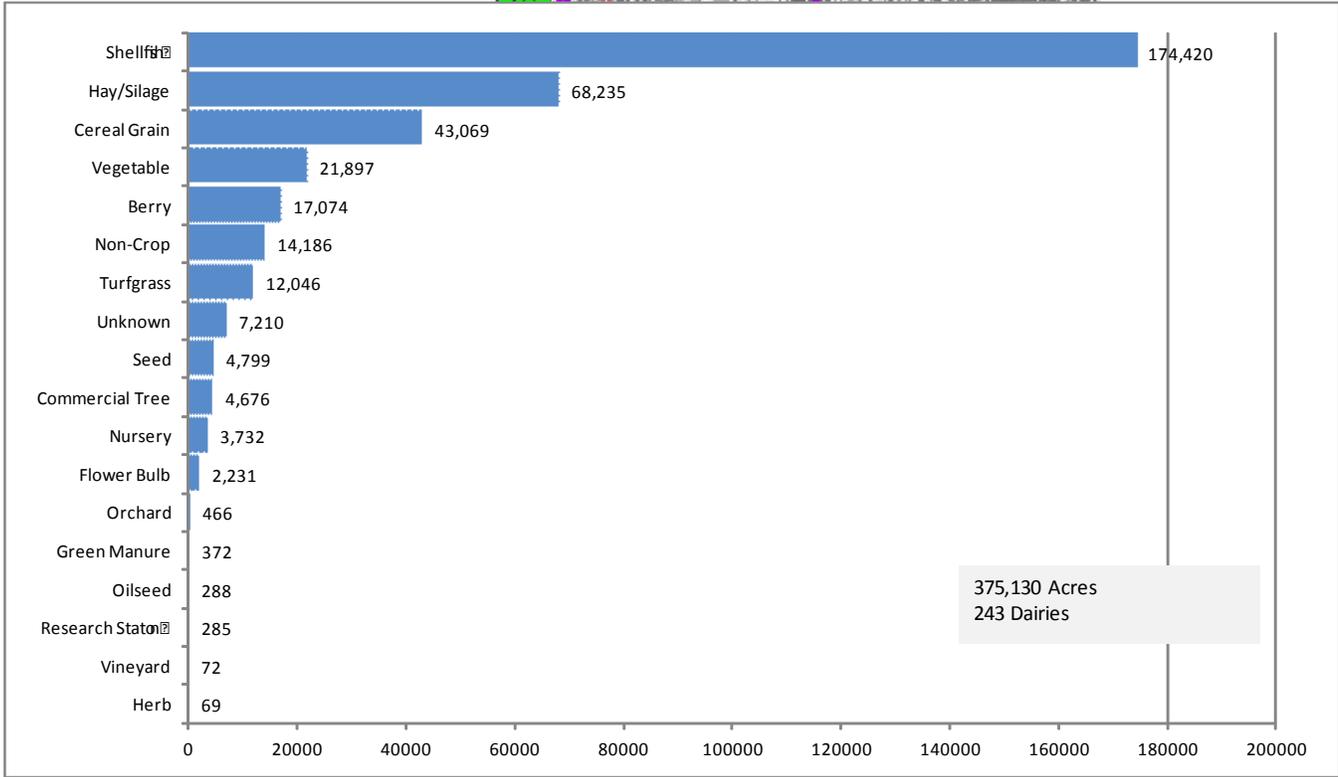
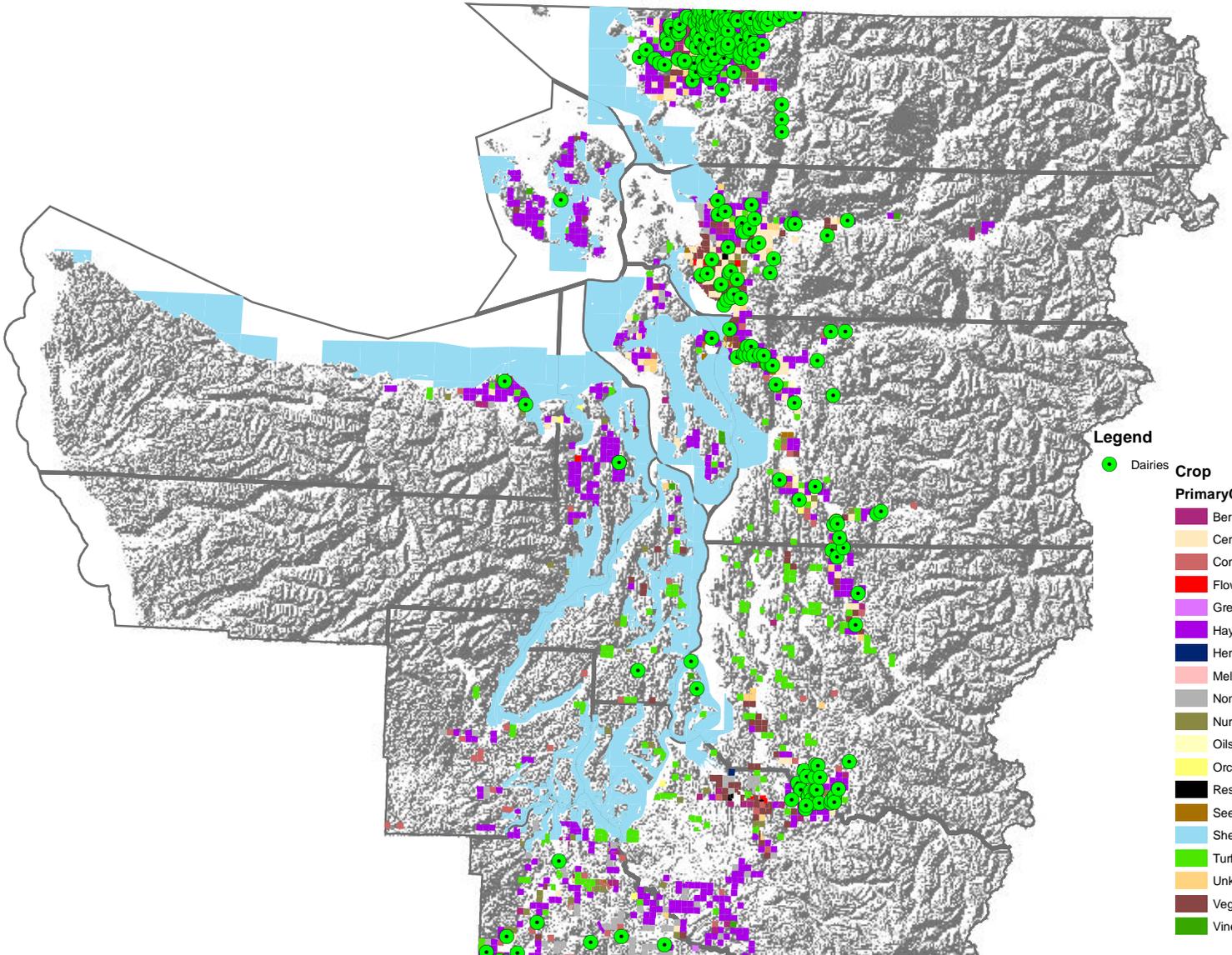
The group agreed that ambient monitoring for fecal coliform is vital as a baseline and required by national shellfish standards, but we also need source ID and effectiveness monitoring to address the agricultural issues. We discussed the need to calculate loading from key tributaries.

*Broader Scale Monitoring.* The group agreed that a watershed or sub-watershed based approach to monitor the effectiveness of agricultural BMPs across a broader scale is a priority. We also support the existing status and trends monitoring program that is proposed for the Puget Sound stormwater group as a means to determine regional scale status and trends for watershed health and salmon habitat.

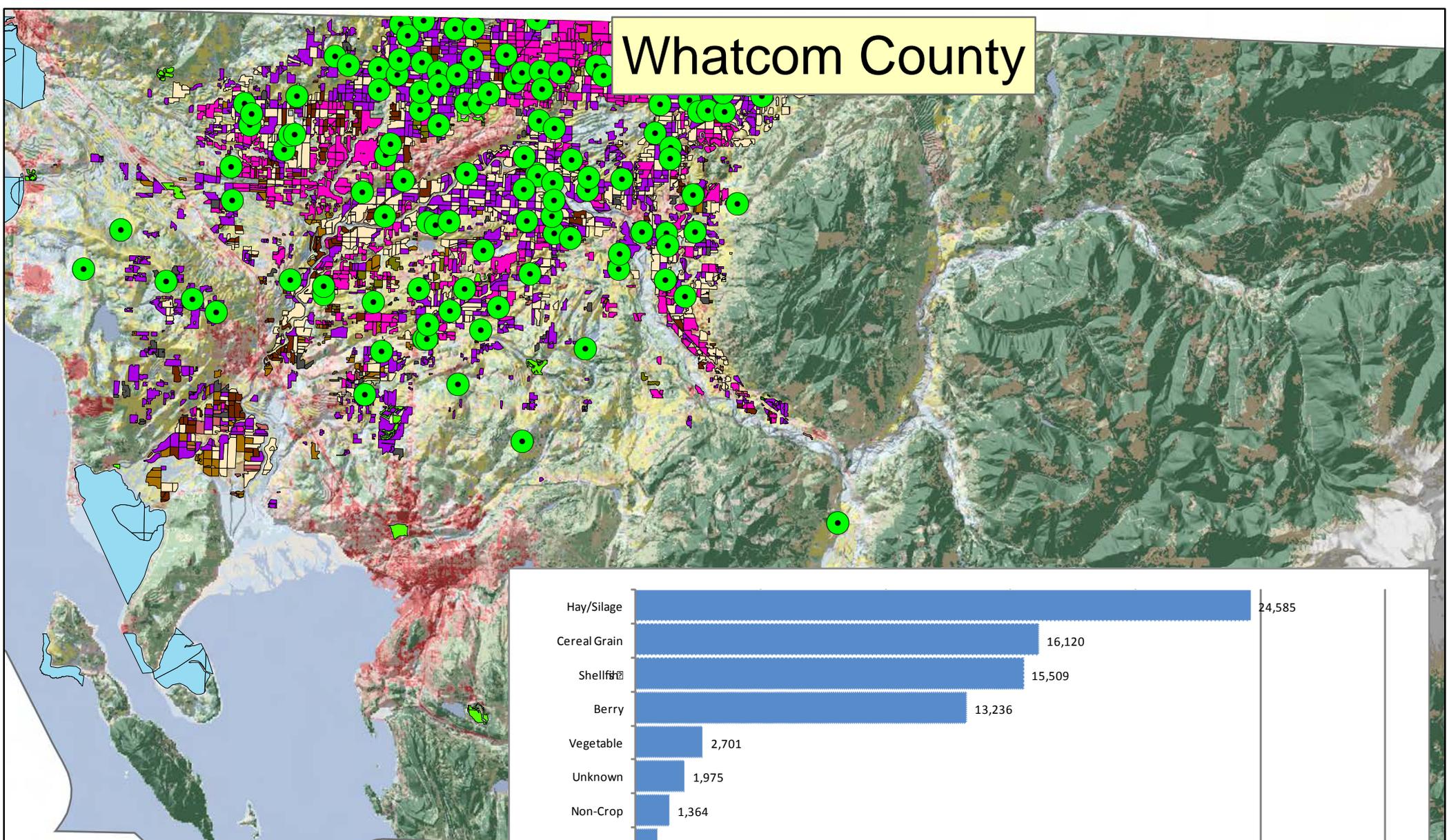
*Hobby Farms/Small Scale Agriculture.* Small scale agriculture is believed to play an important role in non-point inputs to stormwater, but data are either lacking or difficult to obtain. We've obtained or will obtain data that quantifies this type of agriculture in three Puget Sound counties and are on the search for more. We agreed to spend the January meeting discussing available information and developing recommendations for future studies.

*Other Future Topics.* Literature Review, Review of Dairies and CAFOs, Biosolids, Strategy Development, and other parameters such as metals and hormones.

# Puget Sound Agriculture

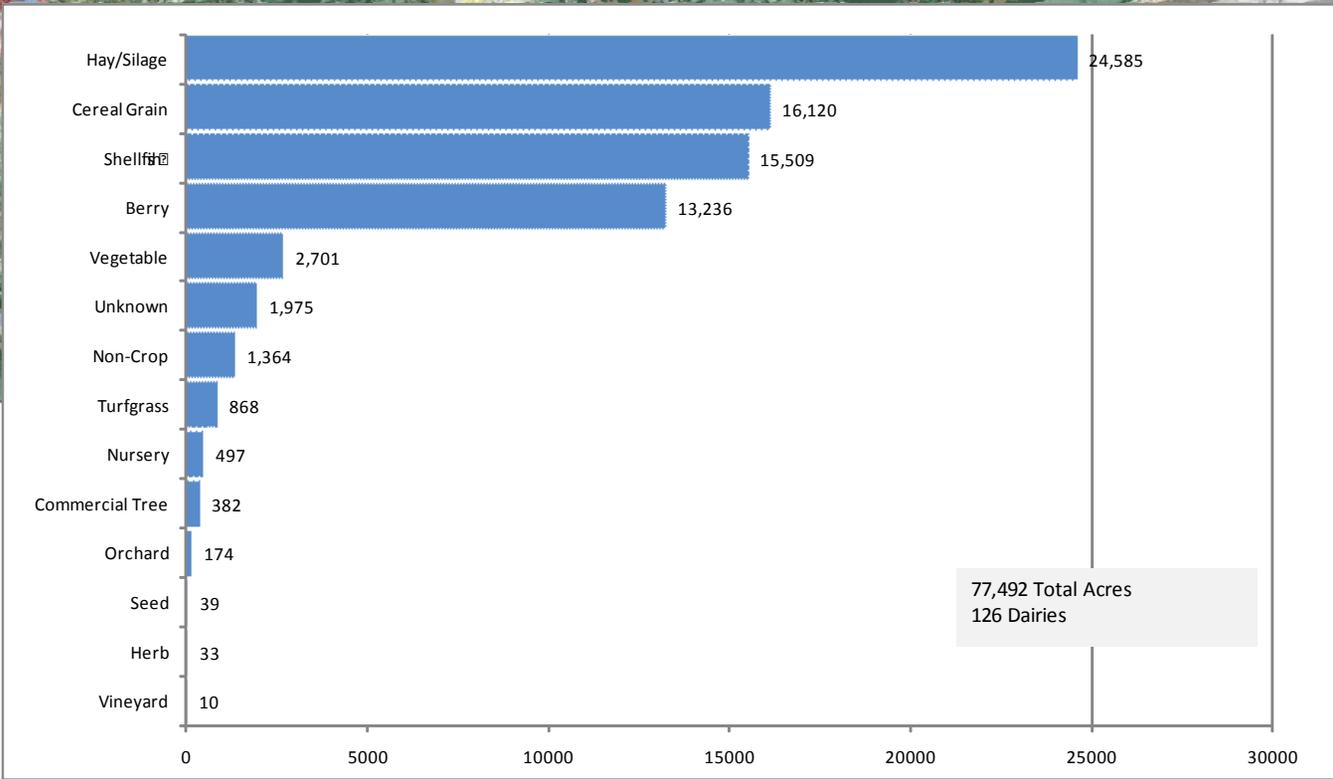


# Whatcom County

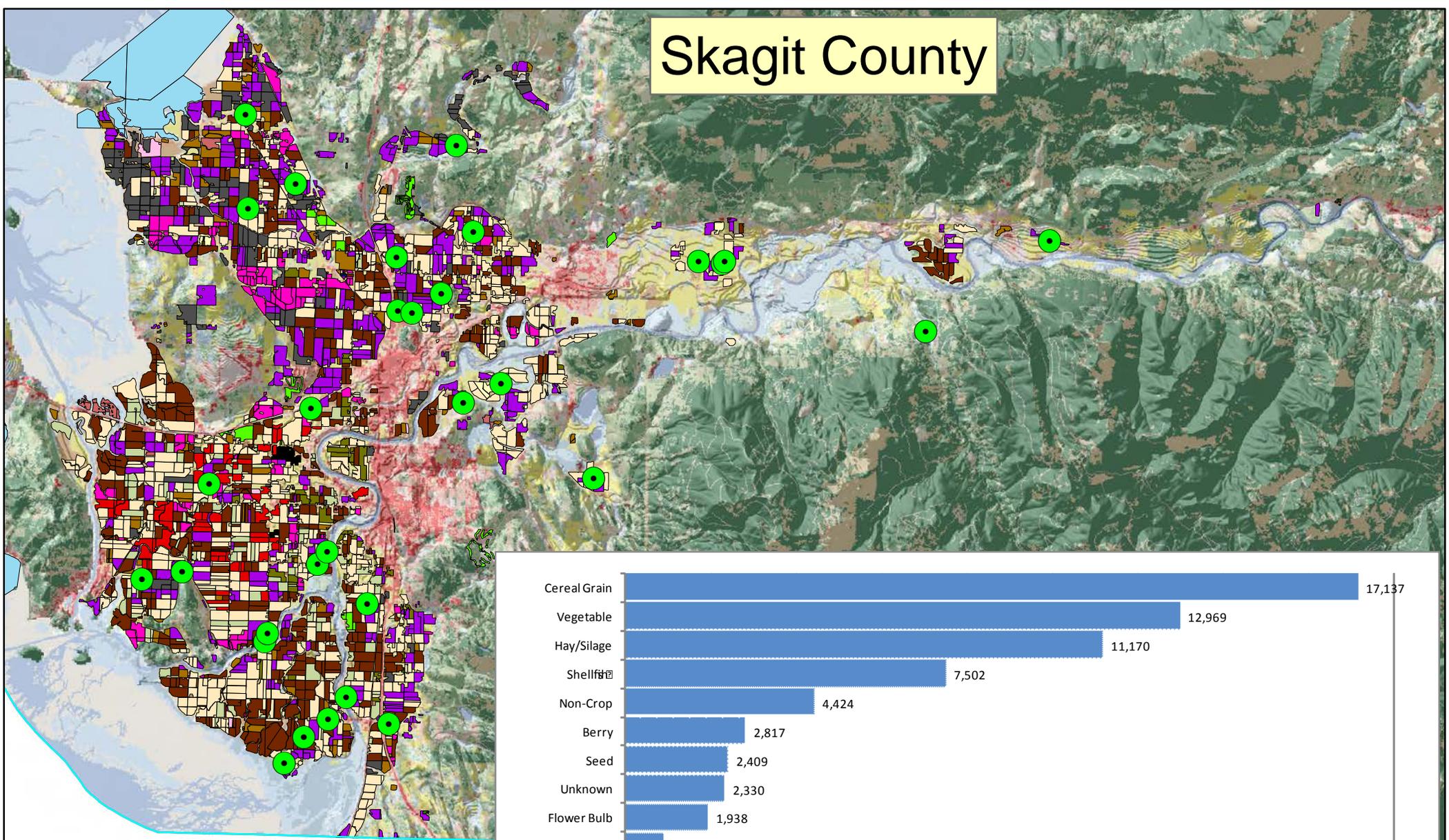


## Legend

- Dairies
- Berry
- Oilseed
- Cereal Grain
- Orchard
- Commercial Tree
- ResearchStation
- Flower Bulb
- Seed
- Green Manure
- Shellfish
- Hay/Silage
- Turfgrass
- Herb
- Unknown
- Melon
- Vegetable
- Non-Crop
- Vineyard
- Nursery

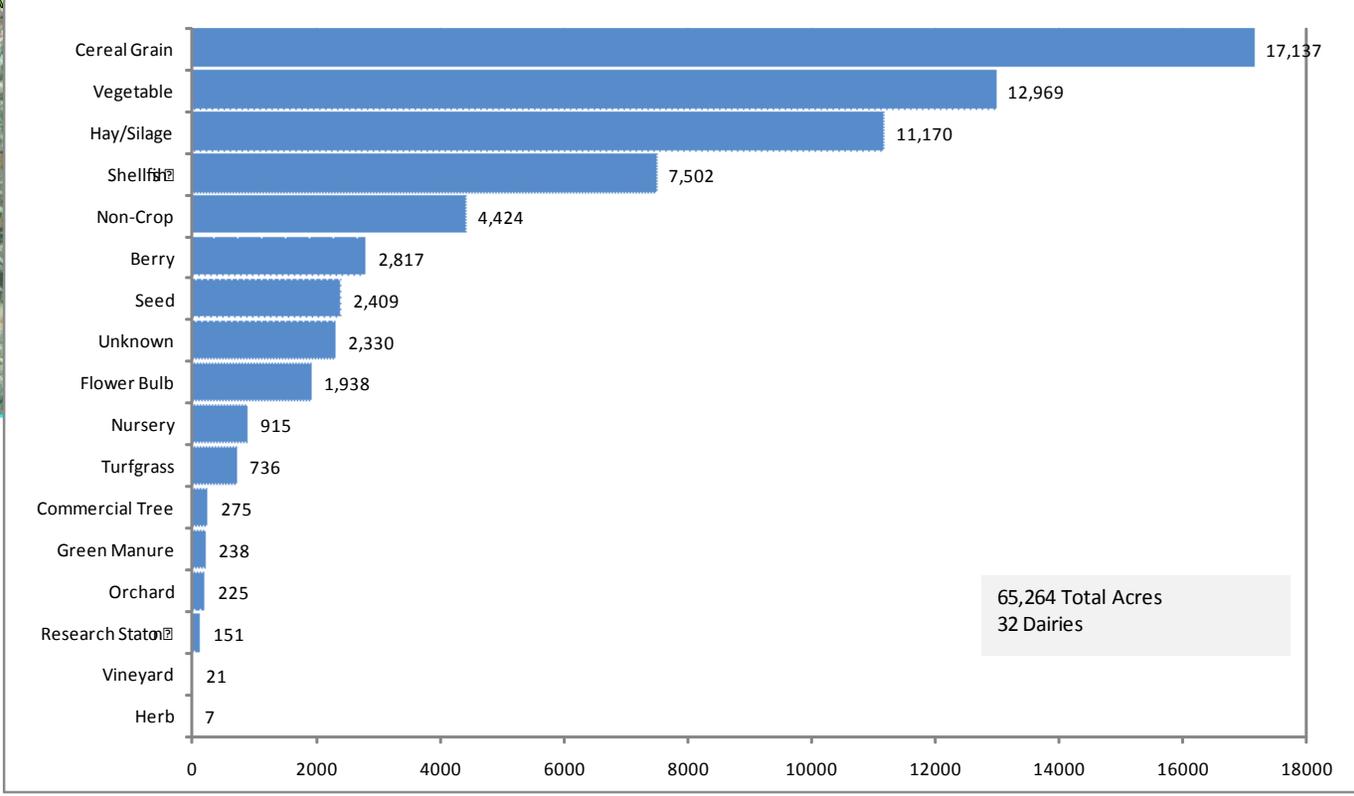


# Skagit County



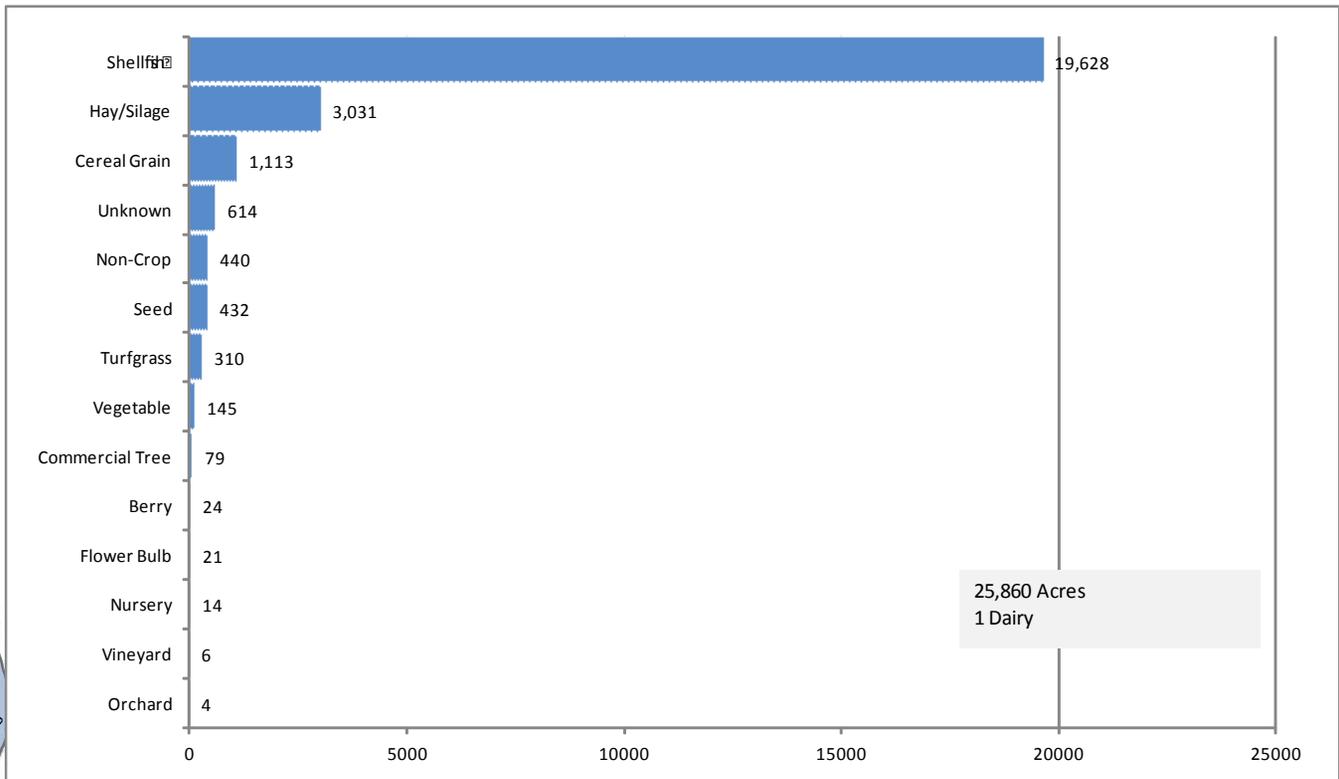
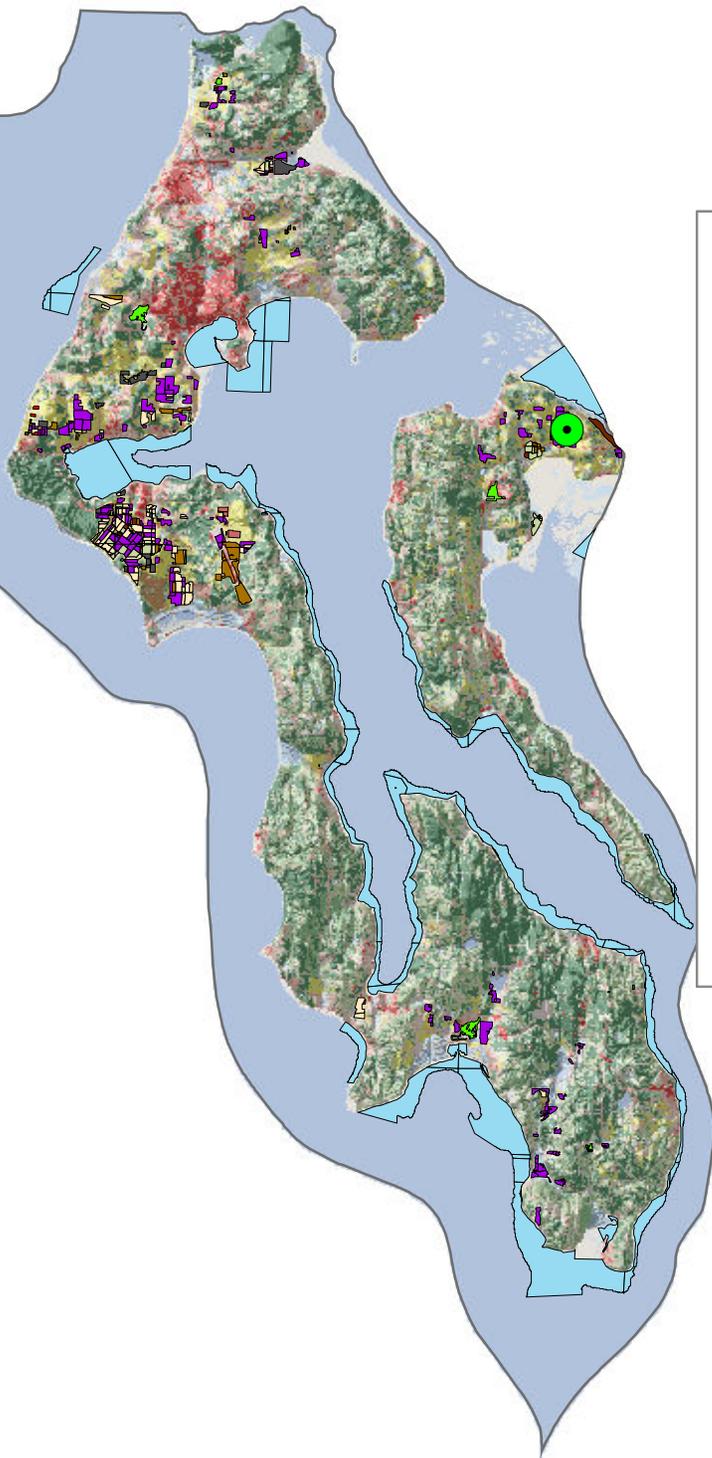
## Legend

- Dairies2011\_size
- Berry
- Oilseed
- Cereal Grain
- Orchard
- Commercial Tree
- ResearchStation
- Flower Bulb
- Seed
- Green Manure
- Shellfish
- Hay/Silage
- Turfgrass
- Herb
- Unknown
- Melon
- Vegetable
- Non-Crop
- Vineyard
- Nursery



65,264 Total Acres  
32 Dairies

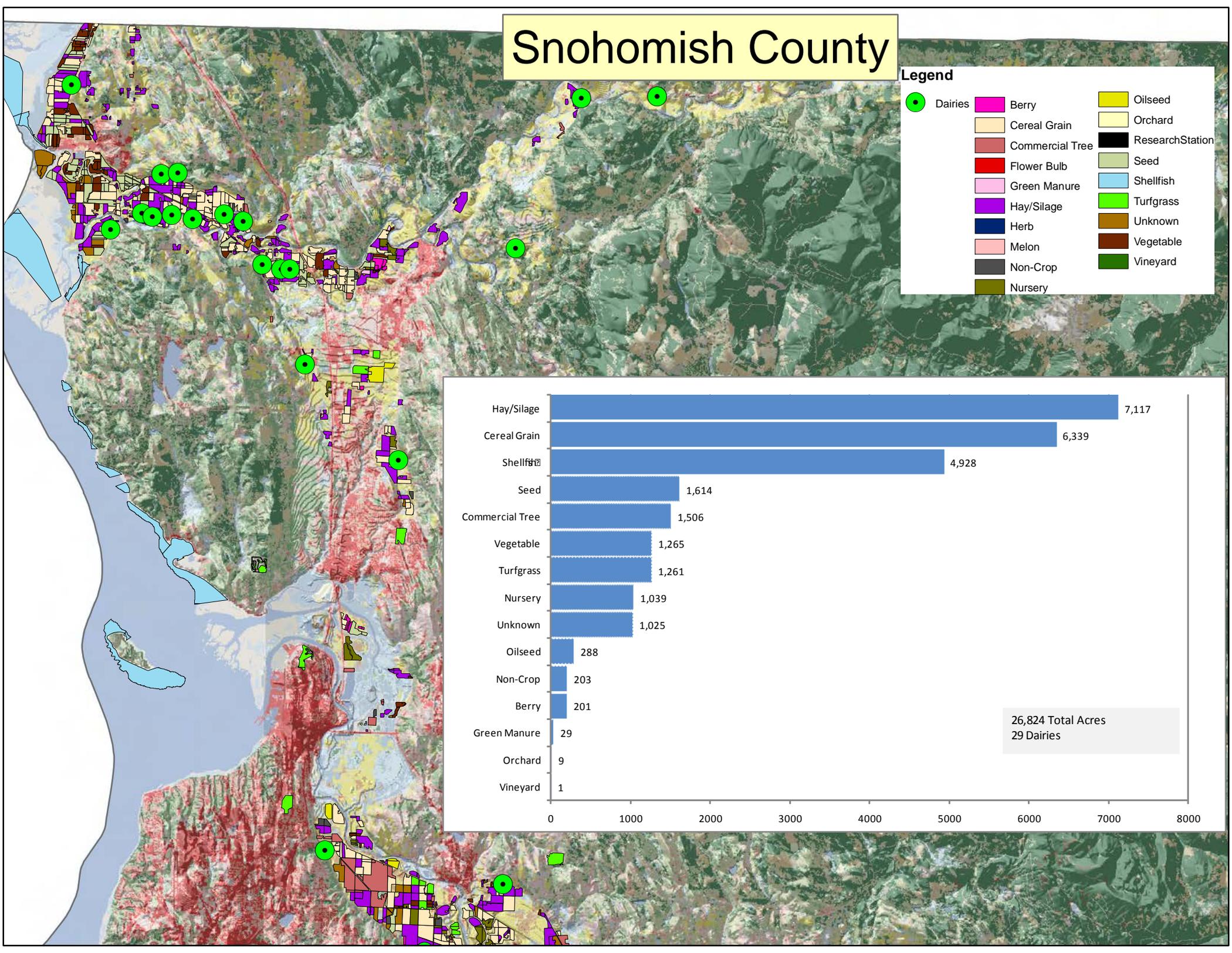
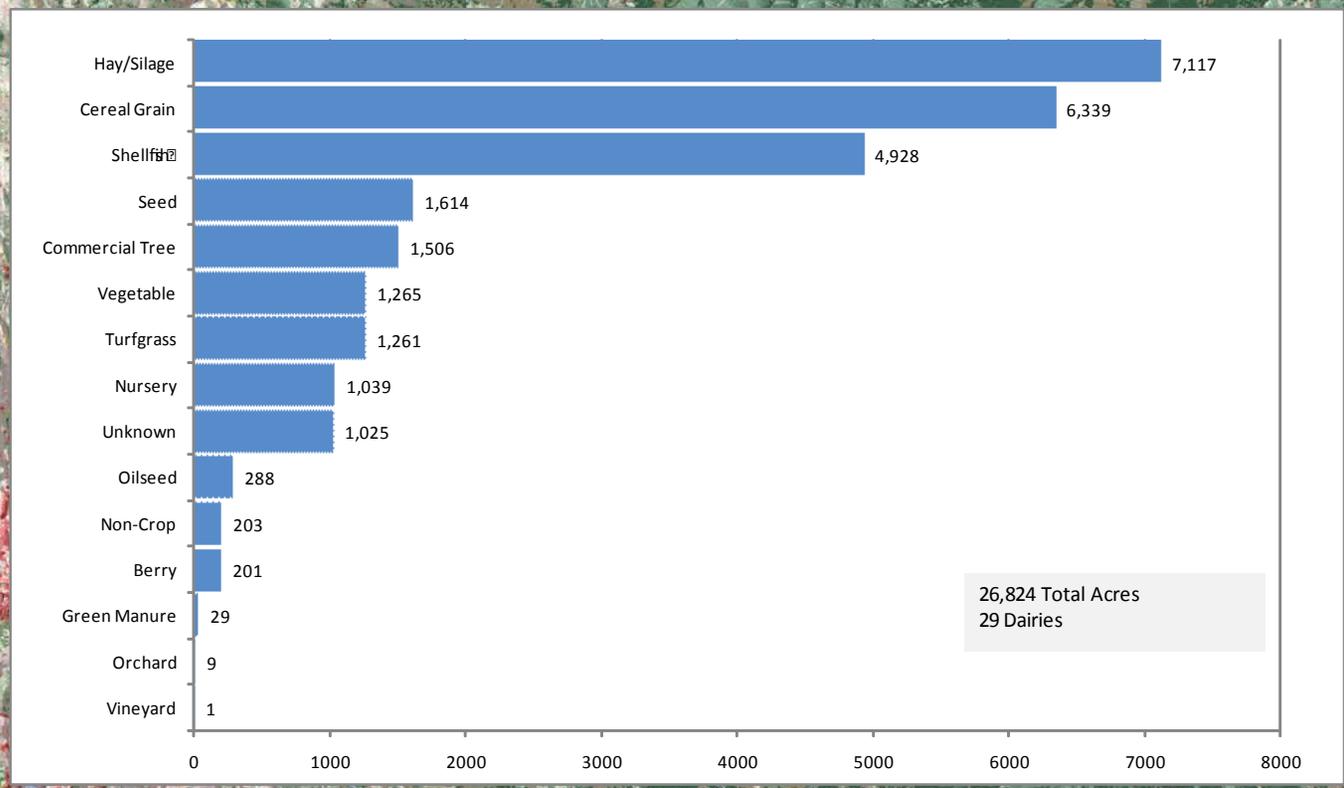
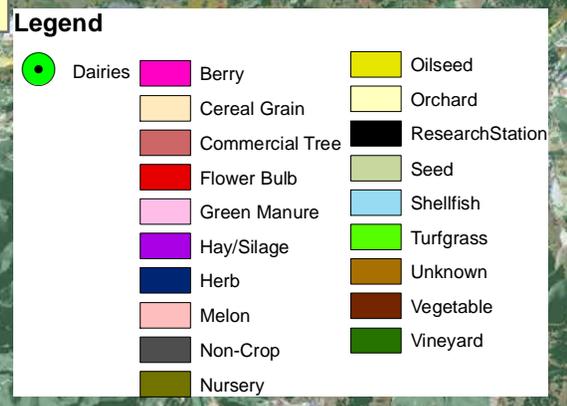
# Island County



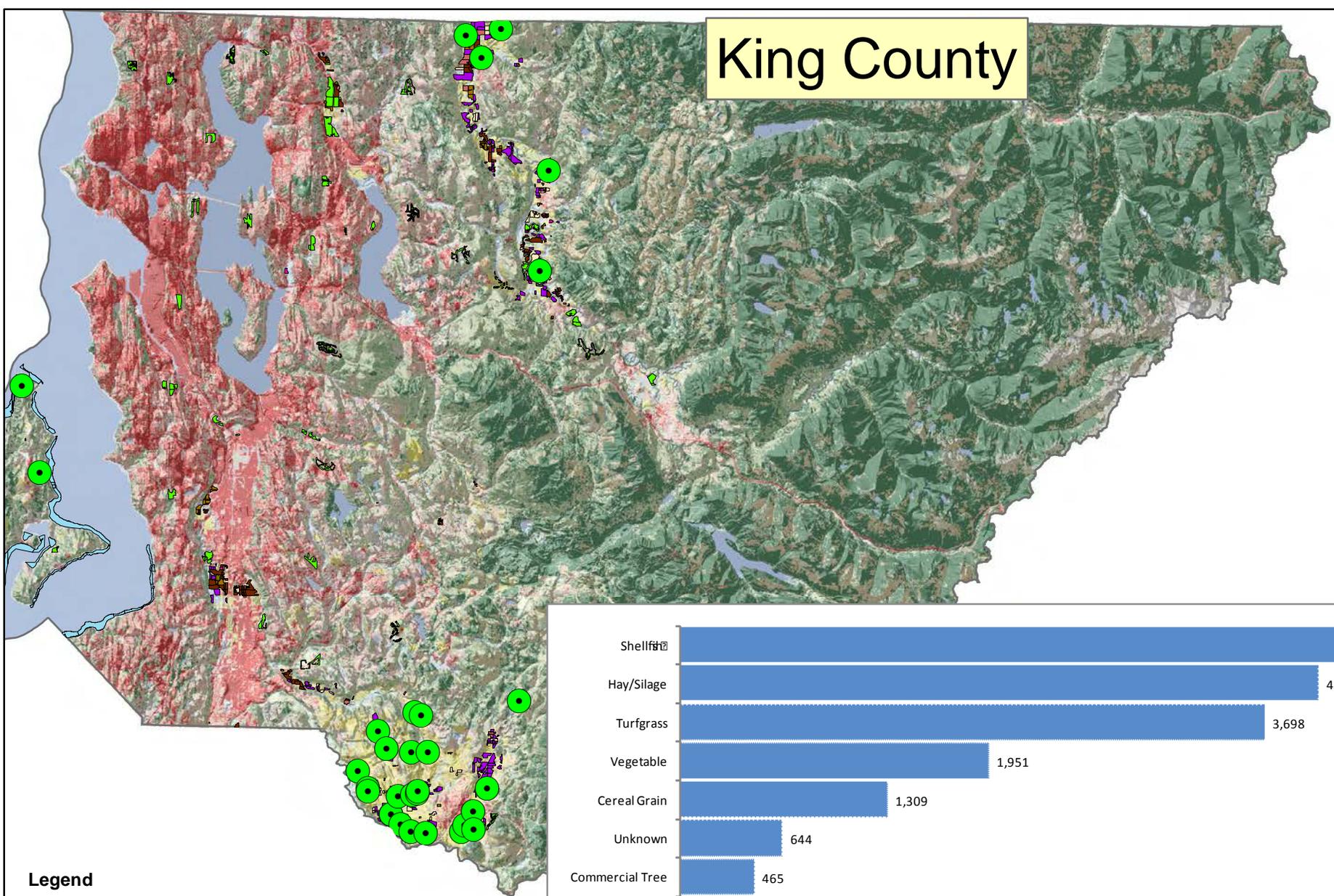
## Legend

-  Dairies
-  Berry
-  Oilseed
-  Cereal Grain
-  Orchard
-  Commercial Tree
-  ResearchStation
-  Flower Bulb
-  Seed
-  Green Manure
-  Shellfish
-  Hay/Silage
-  Turfgrass
-  Herb
-  Unknown
-  Melon
-  Vegetable
-  Non-Crop
-  Vineyard
-  Nursery

# Snohomish County

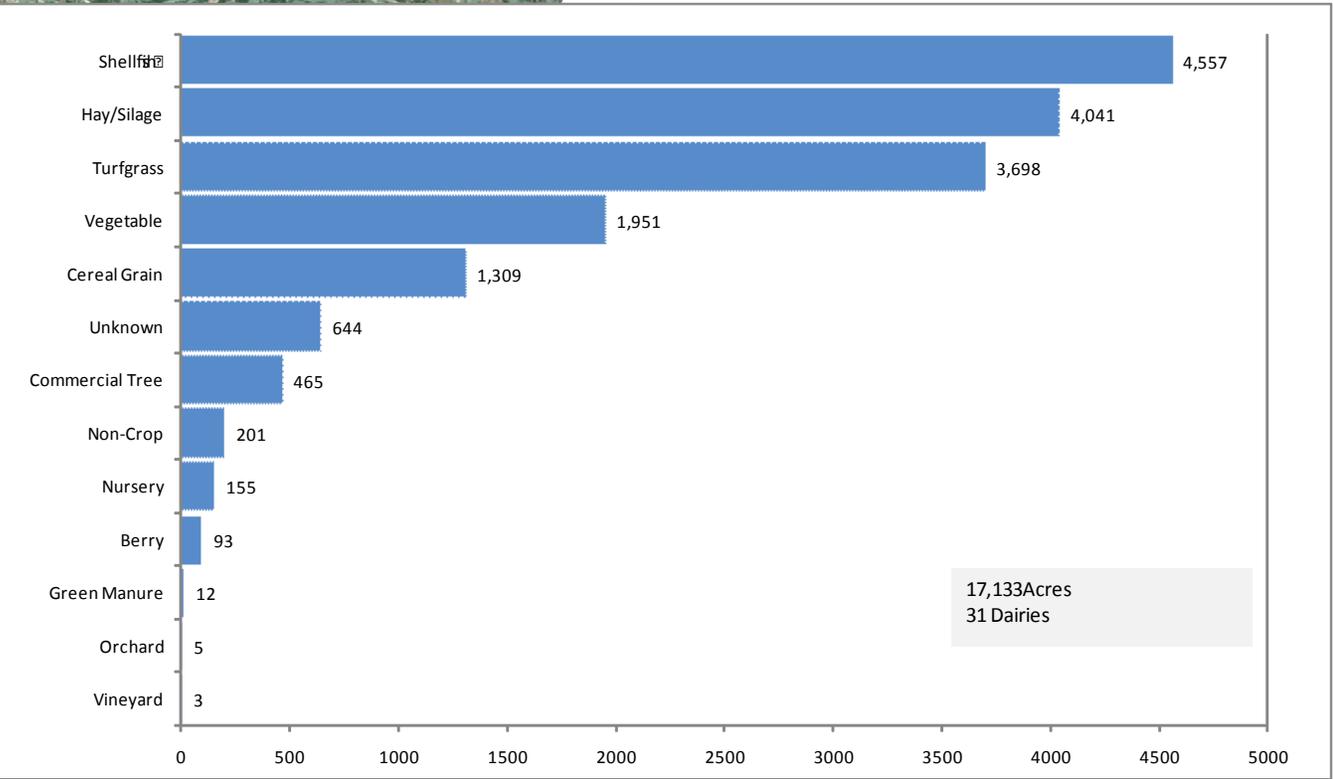


# King County

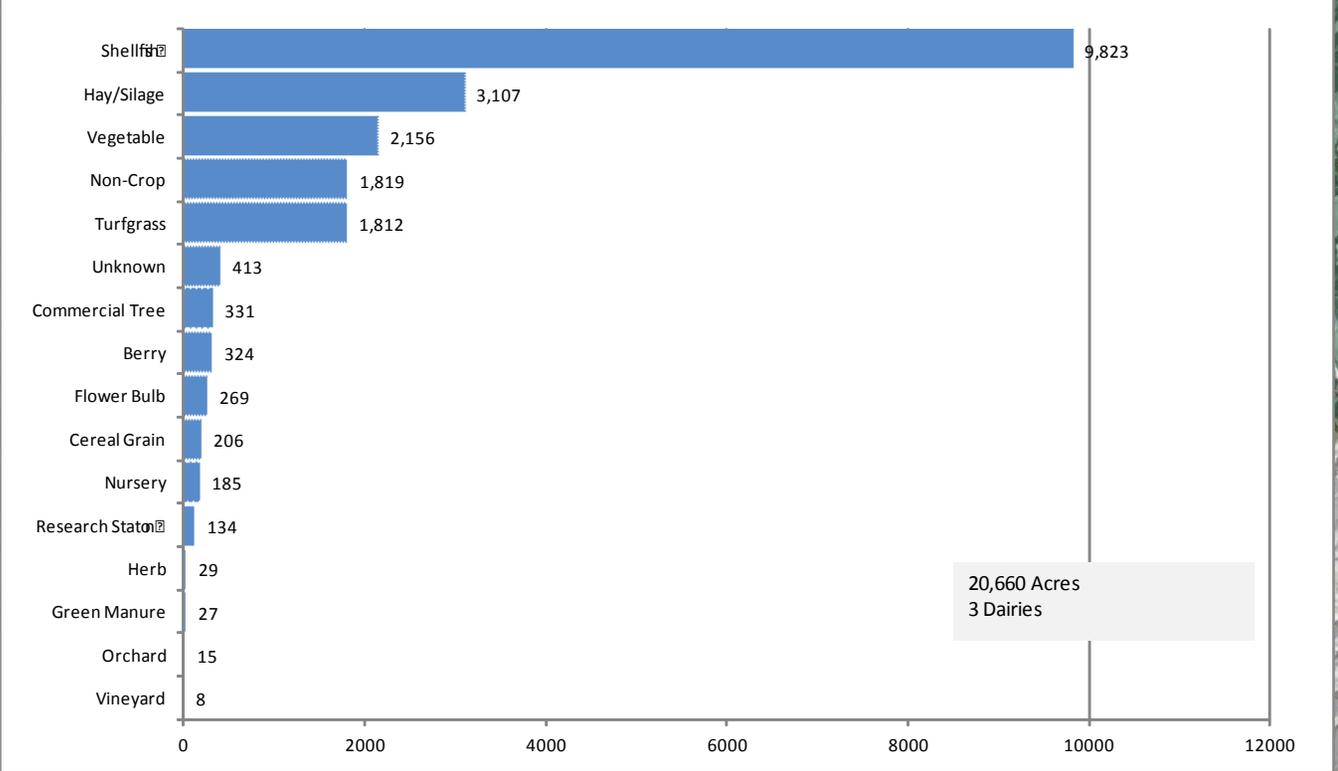
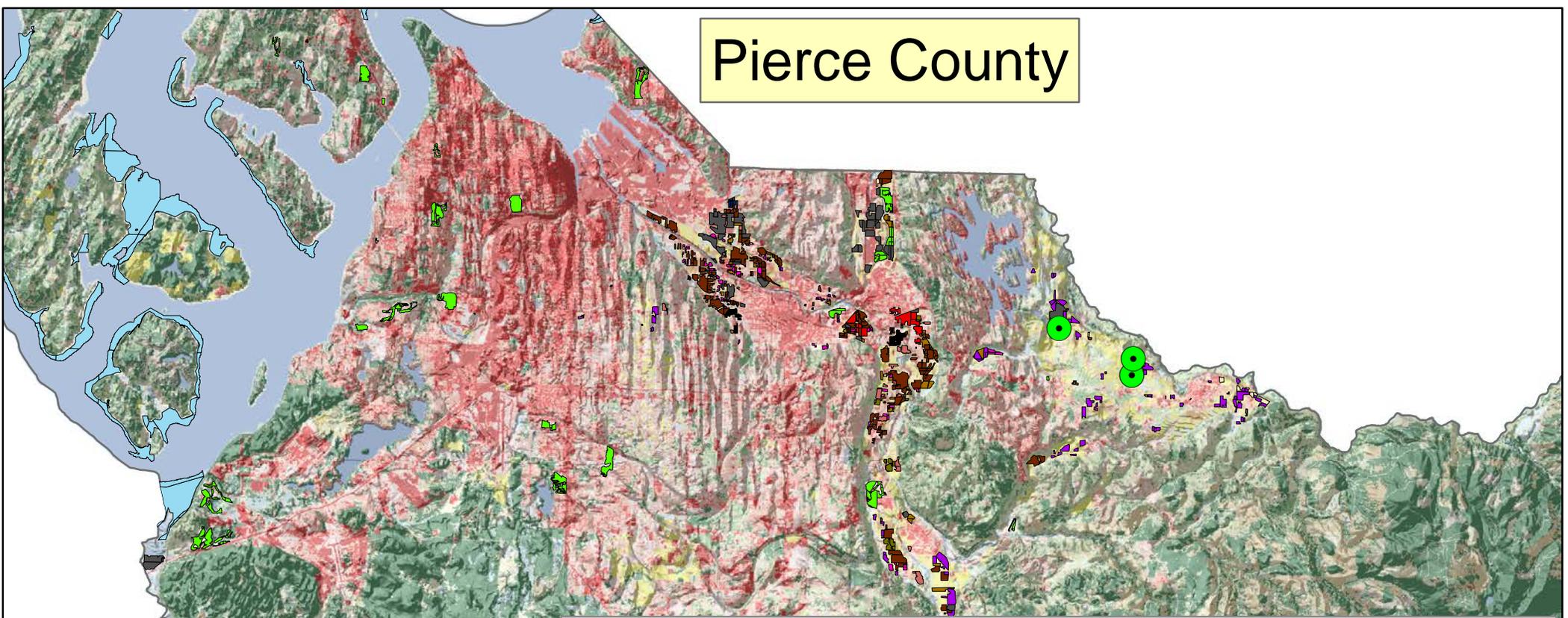


## Legend

-  Dairies
-  Berry
-  Oilseed
-  Cereal Grain
-  Research Station
-  Commercial Tree
-  Seed
-  Flower Bulb
-  Shellfish
-  Green Manure
-  Turfgrass
-  Hay/Silage
-  Unknown
-  Herb
-  Vegetable
-  Melon
-  Vineyard
-  Non-Crop
-  Nursery



# Pierce County

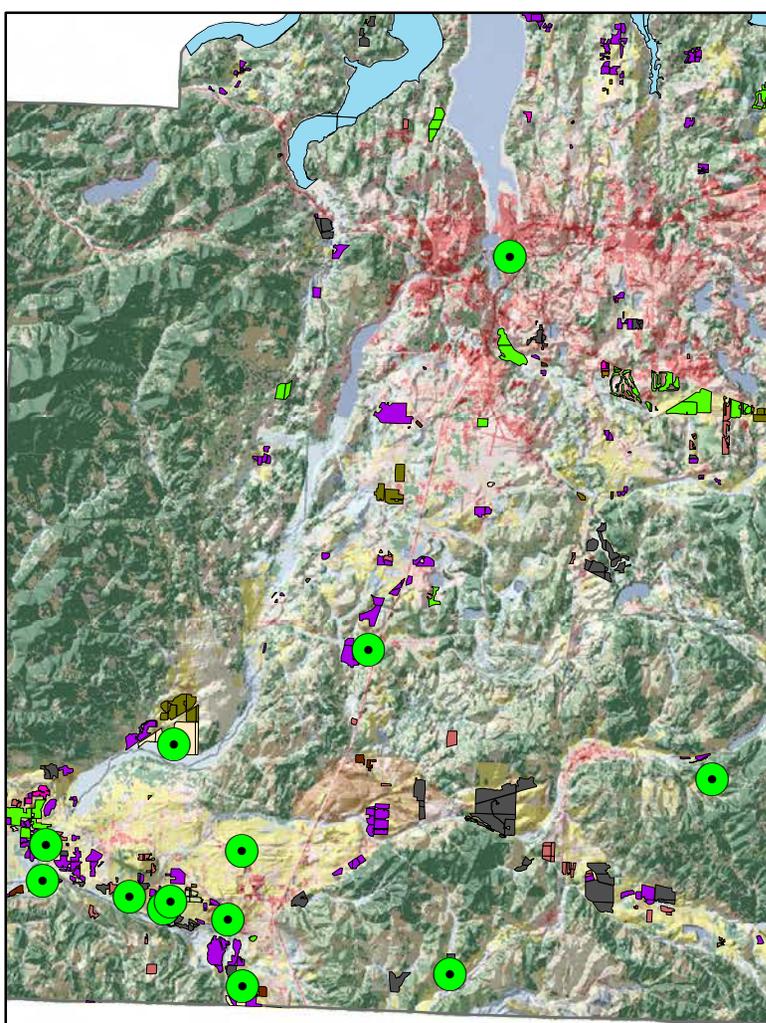


## Legend

-  Dairies
-  Berry
-  Oilseed
-  Cereal Grain
-  Orchard
-  Research Station
-  Commercial Tree
-  Seed
-  Shellfish
-  Flower Bulb
-  Turfgrass
-  Green Manure
-  Hay/Silage
-  Unknown
-  Herb
-  Vegetable
-  Melon
-  Vineyard
-  Non-Crop
-  Nursery

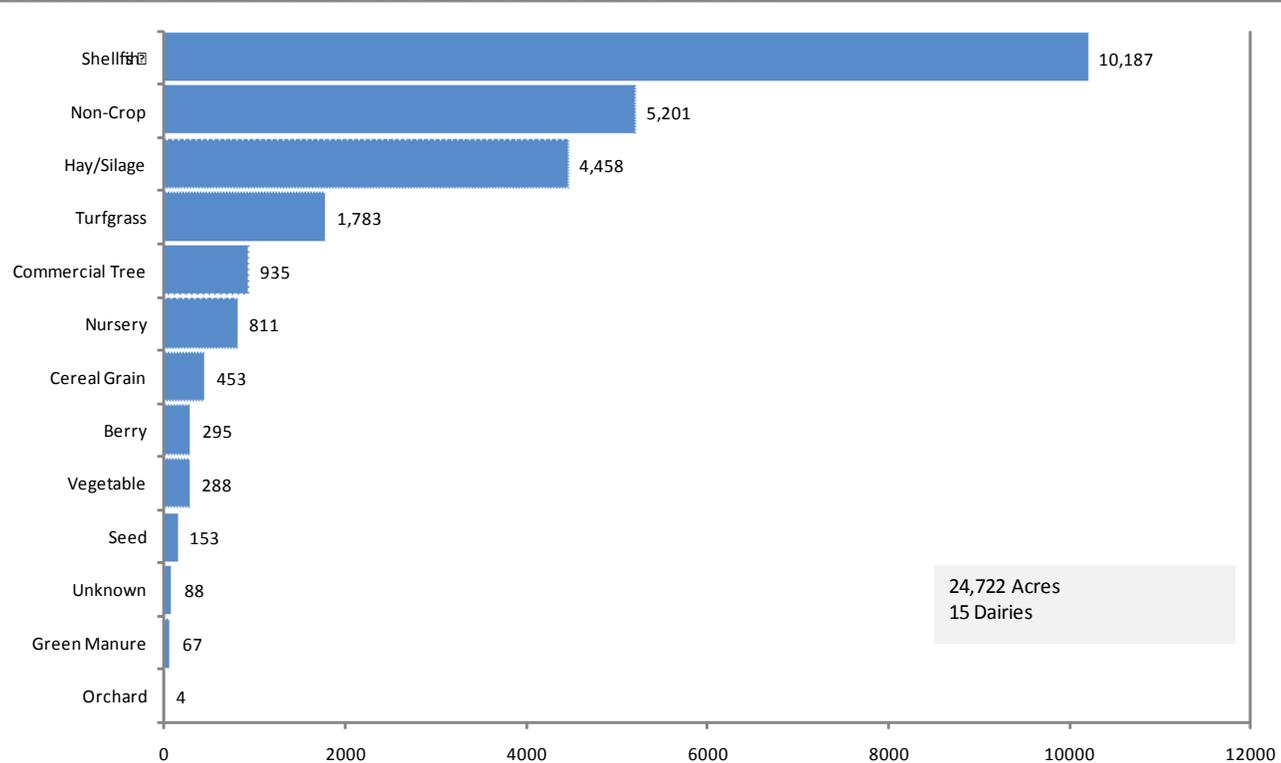
20,660 Acres  
3 Dairies

# Thurston County

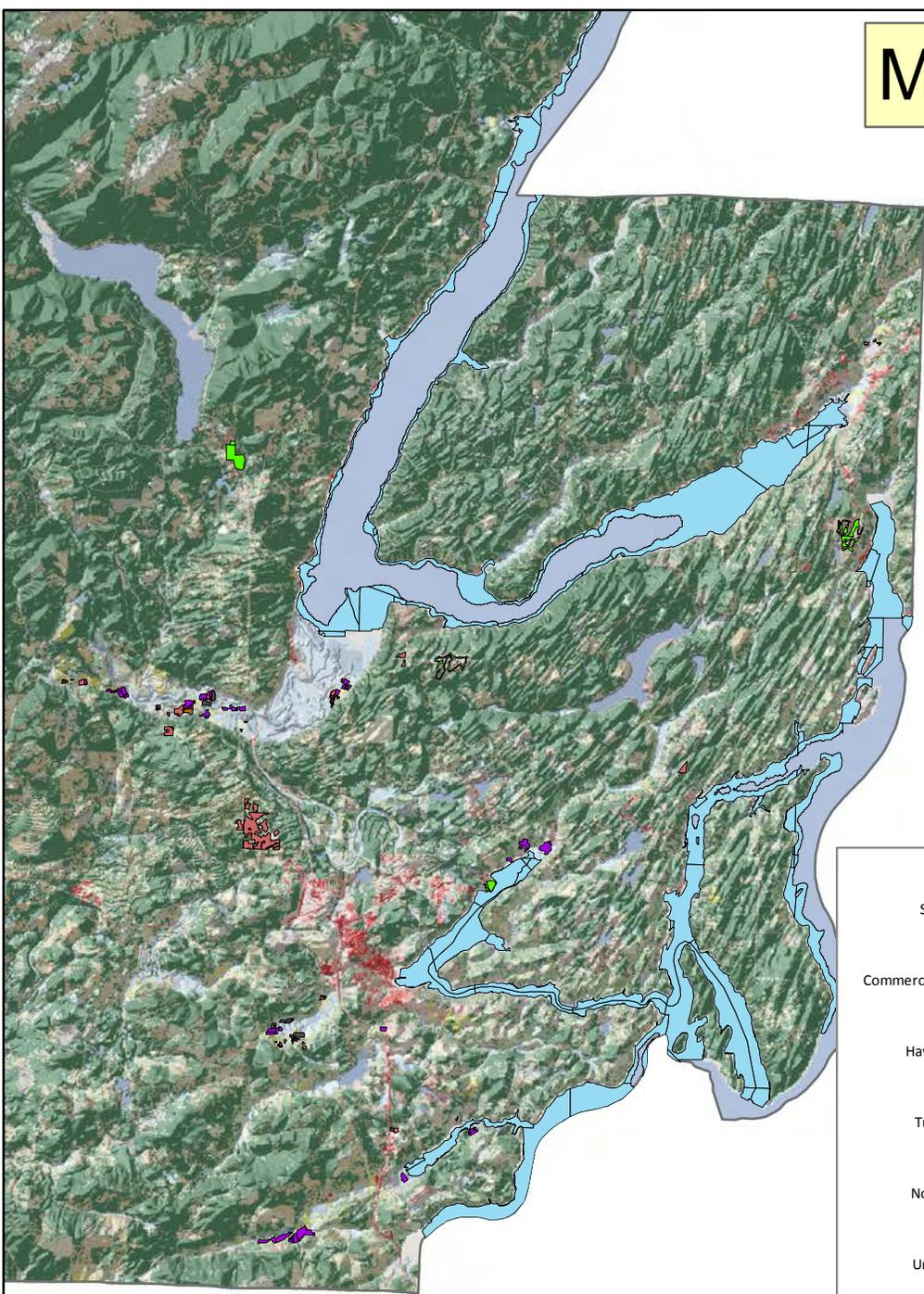


## Legend

- Dairies
- Berry
- Oilseed
- Cereal Grain
- Orchard
- Commercial Tree
- Research Station
- Flower Bulb
- Seed
- Green Manure
- Shellfish
- Hay/Silage
- Turfgrass
- Herb
- Unknown
- Melon
- Vegetable
- Non-Crop
- Vineyard
- Nursery

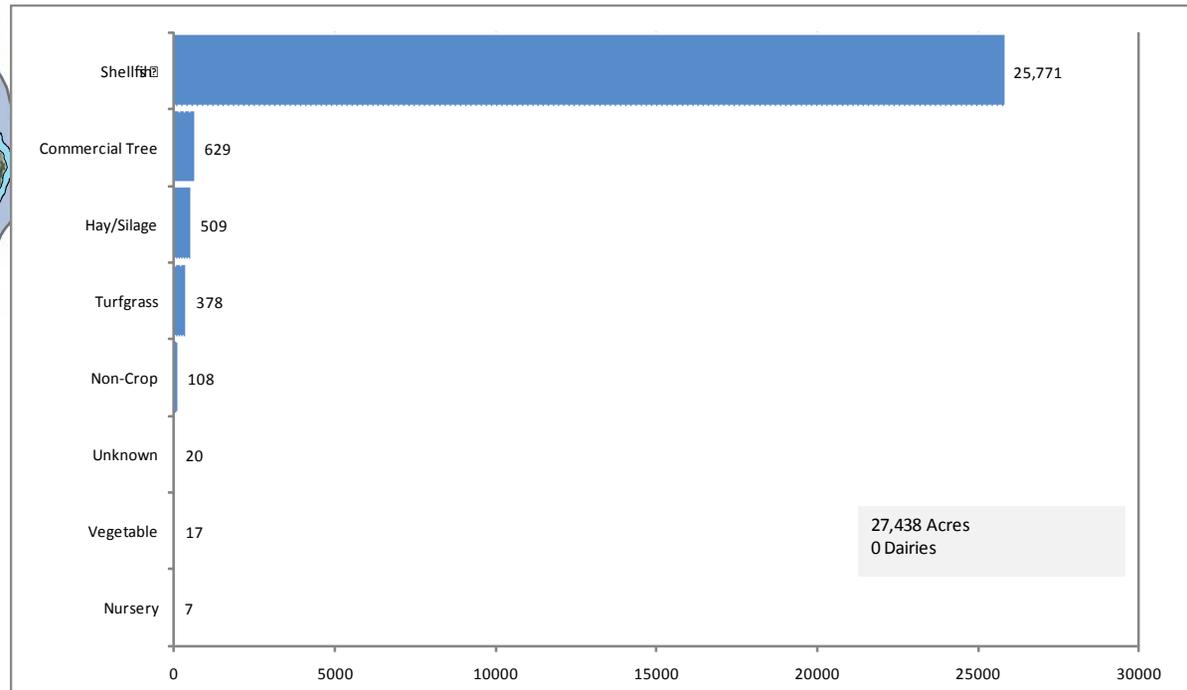


# Mason County

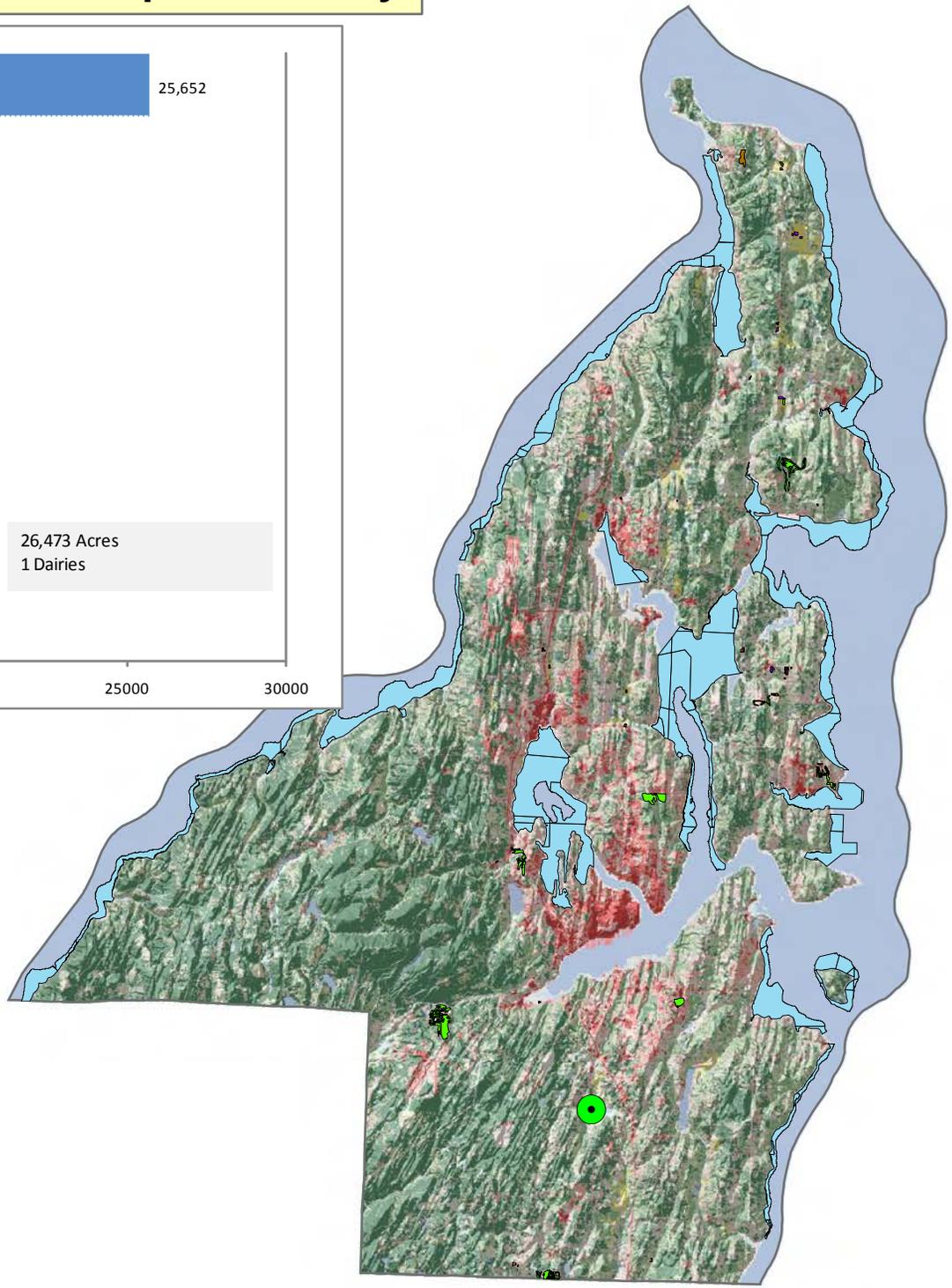
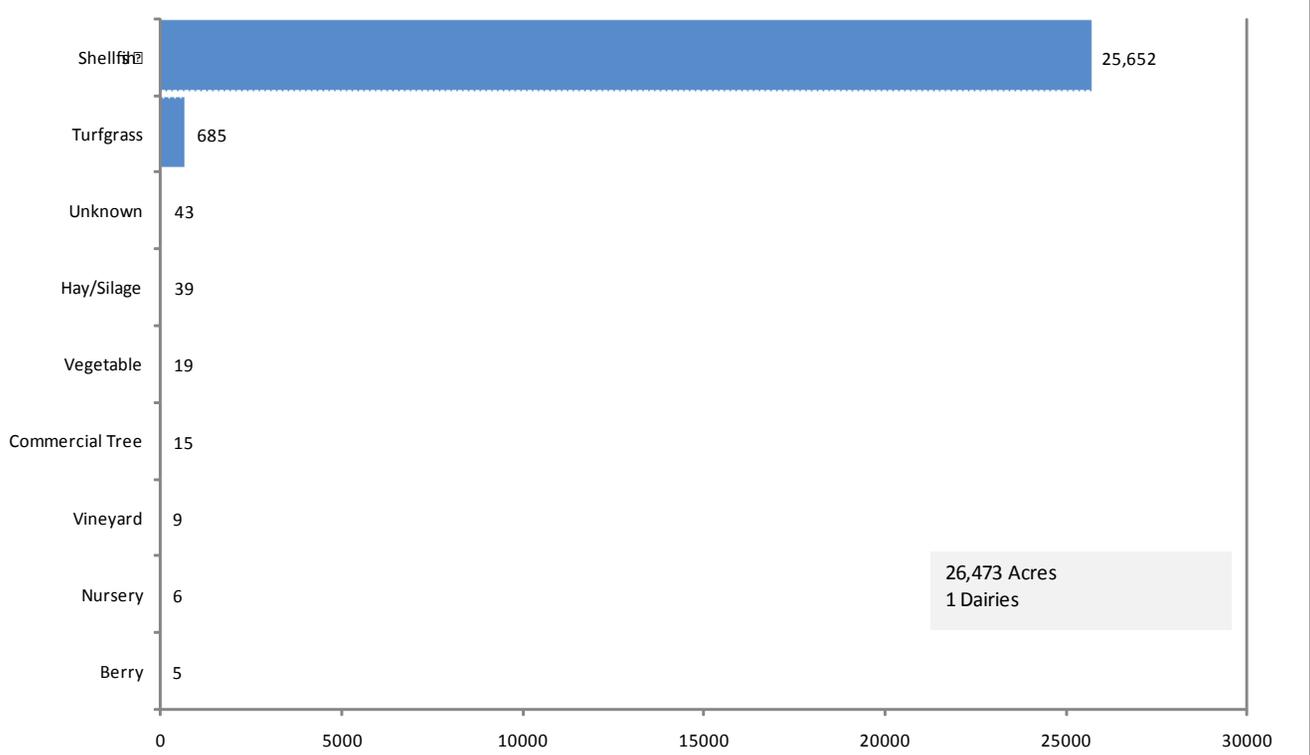


## Legend

- |  |   |
|--|---|
| <span style="color: magenta;">■</span> Berry       | <span style="color: yellow;">■</span> Oilseed         |
| <span style="color: orange;">■</span> Cereal Grain | <span style="color: lightyellow;">■</span> Orchard    |
| <span style="color: red;">■</span> Commercial Tree | <span style="color: black;">■</span> Research Station |
| <span style="color: red;">■</span> Flower Bulb     | <span style="color: lightgreen;">■</span> Seed        |
| <span style="color: pink;">■</span> Green Manure   | <span style="color: cyan;">■</span> Shellfish         |
| <span style="color: purple;">■</span> Hay/Silage   | <span style="color: limegreen;">■</span> Turfgrass    |
| <span style="color: darkblue;">■</span> Herb       | <span style="color: brown;">■</span> Unknown          |
| <span style="color: lightcoral;">■</span> Melon    | <span style="color: darkbrown;">■</span> Vegetable    |
| <span style="color: gray;">■</span> Non-Crop       | <span style="color: darkgreen;">■</span> Vineyard     |
| <span style="color: olive;">■</span> Nursery       |   |



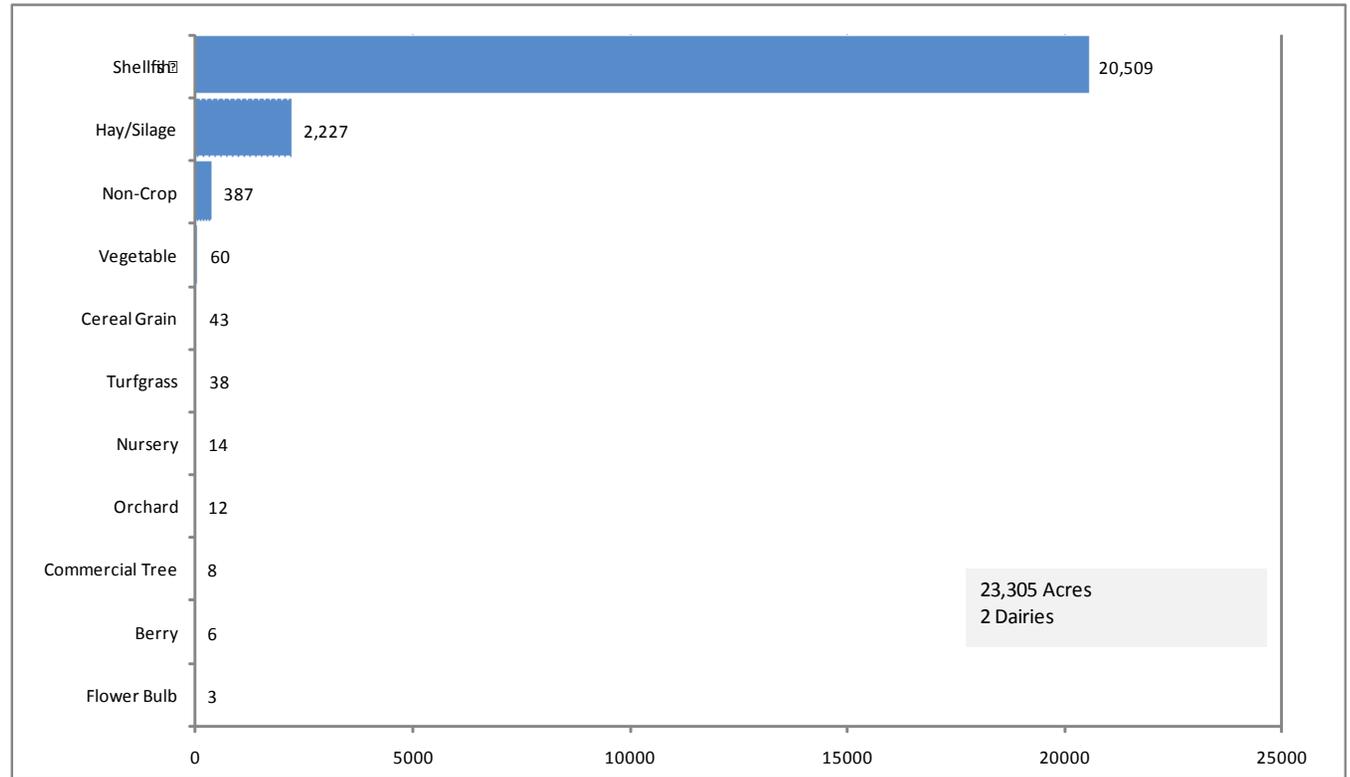
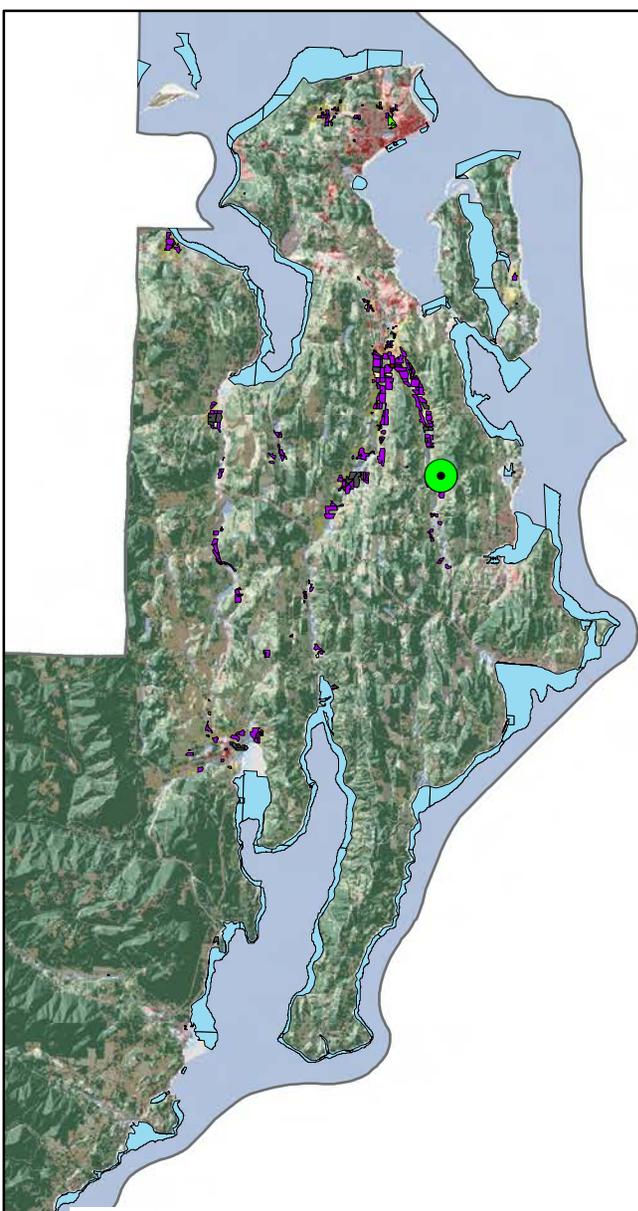
# Kitsap County



## Legend

- Dairies
- Berry
- Oilseed
- Cereal Grain
- Orchard
- Commercial Tree
- ResearchStation
- Flower Bulb
- Seed
- Green Manure
- Shellfish
- Hay/Silage
- Turfgrass
- Herb
- Unknown
- Melon
- Vegetable
- Non-Crop
- Vineyard
- Nursery

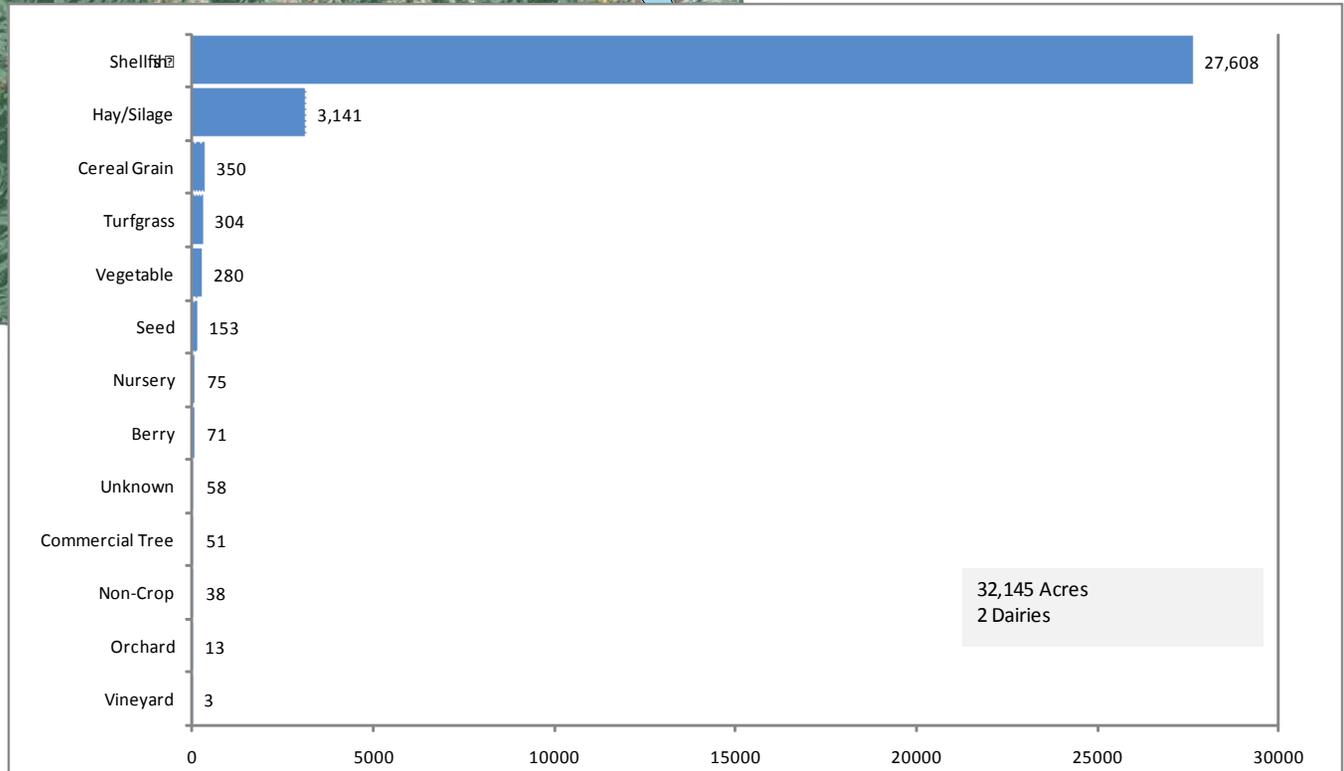
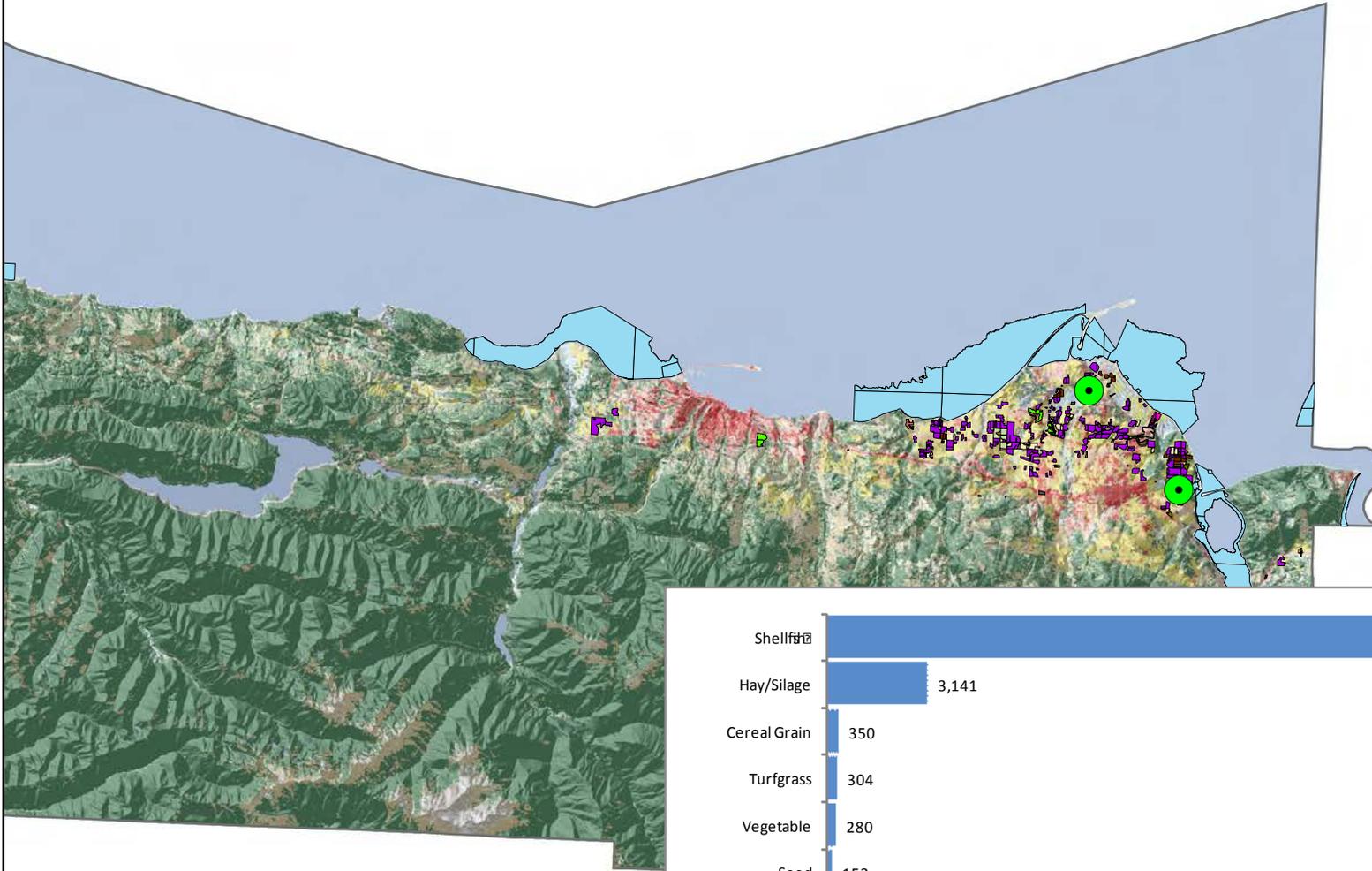
# Jefferson County



## Legend



# Clallam County



## Legend

- Dairies
- Berry
- Oilseed
- Cereal Grain
- Orchard
- Commercial Tree
- Research Station
- Flower Bulb
- Seed
- Shellfish
- Green Manure
- Turfgrass
- Hay/Silage
- Turfgrass
- Herb
- Unknown
- Melon
- Vegetable
- Non-Crop
- Vineyard
- Nursery

Crop Type	Crop Group
Alfalfa Hay	Hay/Silage
Alfalfa Seed	Seed
Alfalfa/Grass Hay	Hay/Silage
Alkali Bee Bed	Non Crop
Allium	Flower Bulb
Apple	Orchard
Apricot	Orchard
Artichoke	Vegetable
Asparagus	Vegetable
Barley	Cereal Grain
Bean Seed	Seed
Bean, Dry	Vegetable
Bean, Green	Vegetable
Beet	Vegetable
Beet Seed	Seed
Berry, Unknown	Berry
Blueberry	Berry
Bluegrass Seed	Seed
Broccoli	Vegetable
Broccoli Seed	Seed
Bromegrass Seed	Seed
Brussels Sprouts	Vegetable
Brussels Sprouts Seed	Seed
Buckwheat	Cereal Grain
Bulb, Unknown	Flower Bulb
Burnett Seed	Seed
Cabbage	Vegetable
Cabbage Seed	Seed
Caneberry	Berry
Canola	Oilseed
Cantelope	Melon
Carrot	Vegetable
Carrot Seed	Seed
Cauliflower Seed	Seed
Cauliflower	Vegetable
Cereal Grain, Unknown	Cereal Grain
Cherry	Orchard
Chestnut	Orchard

Crop Type	Crop Group
Chickpea	Vegetable
Christmas Tree	Commercial Tree
Cilantro Seed	Seed
Clover Hay	Hay/Silage
Clover Seed	Seed
Conifer Seed	Seed
Corn Seed	Seed
Corn, Field	Cereal Grain
Corn, Sweet	Vegetable
Corn, Unknown	Cereal Grain
Cranberry	Berry
CRP/Conservation	Non Crop
Cucumber	Vegetable
Currant	Berry
Daffodil	Flower Bulb
Dahlia	Flower Bulb
Developed	Non Crop
Dill	Oilseed
Driving Range	Turfgrass
Fallow	Unknown
Fescue Seed	Seed
Filbert	Orchard
Garlic	Vegetable
Golf Course	Turfgrass
Grape, Concord	Vineyard
Grape, Unknown	Vineyard
Grape, Wine	Vineyard
Grass Hay	Hay/Silage
Grass Seed	Seed
Green Manure	Green Manure
Hay/Silage, Unknown	Hay/Silage
Herb, Medicinal	Herb
Herb, Unknown	Herb
Hops	Herb
Iris	Flower Bulb
Kale	Vegetable
Kiwi	Berry
Leek	Vegetable

Crop Type	Crop Group
Lentil	Vegetable
Lettuce	Vegetable
Lettuce Seed	Seed
Market Crops	Vegetable
Melon, Unknown	Melon
Mint	Herb
Mustard	Oilseed
Mustard Seed	Seed
Nectarine/Peach	Orchard
Nursery, Caneberry	Nursery
Nursery, Greenhouse	Nursery
Nursery, Holly	Nursery
Nursery, Lavender	Nursery
Nursery, Lilac	Nursery
Nursery, Orchard/Vineyard	Nursery
Nursery, Ornamental	Nursery
Nursery, Silviculture	Nursery
Oat	Cereal Grain
Onion	Vegetable
Onion Seed	Seed
Orchard, Unknown	Orchard
Parsley	Herb
Pasture	Non Crop
Pea Seed	Seed
Pea, Dry	Vegetable
Pea, Green	Vegetable
Peanut	Vegetable
Pear	Orchard
Peony	Flower Bulb
Pepper	Vegetable
Plum	Orchard
Poplar, Hybrid	Commercial Tree
Potato	Vegetable
Potato Seed	Seed
Pumpkin	Vegetable
Radish	Vegetable
Radish Seed	Seed
Research Station	Research Station

Crop Type	Crop Group
Rhubarb	Vegetable
Rutabaga Seed	Seed
Rye	Cereal Grain
Ryegrass Seed	Seed
Safflower Seed	Seed
Sage	Herb
Seed, Unknown	Seed
Shellfish	Shellfish
Shellfish, Unknown	Shellfish
Silvaculture	Commercial Tree
Sod Farm	Turfgrass
Sorghum	Hay/Silage
Soybean	Vegetable
Spinach	Vegetable
Spinach Seed	Seed
Squash	Vegetable
Strawberry	Berry
Sudangrass	Hay/Silage
Sugar Beet	Vegetable
Sugar Beet Seed	Seed
Sunflower Seed	Seed
Swiss Chard Seed	Seed
Tea	Herb
Timothy	Hay/Silage
Tobacco	Herb
Tomato	Vegetable
Triticale	Cereal Grain
Tulip	Flower Bulb
Turnip Seed	Seed
Unknown	Unknown
Vegetable, Unknown	Vegetable
Walnut	Orchard
Watermelon	Melon
Wheat	Cereal Grain
Wheat Fallow	Cereal Grain
Wildlife Feed	Non Crop
Yarrow Seed	Seed
Yew, Pacific	Commercial Tree